

Appl. No. 10/090,483
Amdt. Dated November 23, 2004
Reply to Final Office Action of August 23, 2004

Attorney Docket No. 81754.0072
Customer No. 26021

REMARKS

This application has been carefully reviewed in light of the Office Action dated August 23, 2004. Claims 1-15 remain in this application. Claims 1, 3, 5 and 11 are the independent Claims. Claims 1, 3, 5, 10 and 11 have been amended. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Art-Based Rejections

Claims 1-15 were rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 4,437,767 (Craines). Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Cairns Reference

The applied Cairns reference is directed to an active matrix display incorporating a part-line-at-a-time driving scheme (*See, Cairns, Col. 5, Line 4-8*). According to Cairns, a first group of control elements on a row are enabled for the first sub-period of a line period. A second group of control elements on the same row are then enabled for the second sub-period of the line period (*See, Cairns, Col. 4, Line 28-60*).

Cairns describes a matrix display comprised of single scan line driver 42 and two groups of data lines controlled by signals A and B. For a single line period, the control signal A is activated for the first sub-period and the control signal B is activated for the second sub-period. For each sub-period, a scan line is active and enables one of two groups of control elements (*See, Cairns, Figure 7*).

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Cairns discloses a matrix display comprised of two scan line drivers and one group of data lines. The left scan line driver 53 generates half-scan lines L1-LN. The right scan line driver 54 generates half-scan lines R1-RN. For each sub-period, a half-scan line is active and enables half of the control elements of a full line. (See, *Cairns, Figure 9*).

The Claims are Patentable Over the Cited References

The present invention is generally directed to a display driver alternately activating two scan line drivers via two set of controls.

As defined by amended independent Claim 1, a semiconductor integrated circuit supplies a plurality of display signals to a corresponding plurality of signal electrodes of an image display apparatus that displays a two-dimensional image. The semiconductor integrated circuit successively supplies scanning signals to a first group of scanning electrodes and a second group of scanning electrodes of the image display apparatus. The semiconductor integrated circuit includes a storage device that receives and stores image data. A display signal generation device generates the plurality of display signals to be supplied to the plurality of signal electrodes based on data stored in the storage device. A first scanning signal generation device successively generates scanning signals to be supplied to the first group of scanning electrodes based on a clock signal that defines a scanning timing of the image display apparatus. Each scanning signal enables all of the scanning electrodes on a scanning line. A second scanning signal generation device successively generates scanning signals to be supplied to the second group of scanning electrodes based on the clock signal. Each scanning signal enables all of the scanning electrodes on a scanning line. A timing control device generates the clock signal, and generates a first timing control signal for controlling the first

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scanning signal generation device and a second timing control signal for controlling the second scanning signal generation device such that the first scanning signal generation device and the second scanning signal generation device generate the scanning signals in a specified order. The first scanning signal generation device outputs a first scanning signal successively to the first group of scanning electrodes based on the first control signal. The second scanning signal generation device outputs a second scanning signal successively to the second group of scanning electrodes based on the second control signal.

The applied Cairns reference does not disclose the above features of the present invention. In particular, Cairns does not disclose or suggest "wherein each scanning signal enables all of the scanning electrodes on a scanning line," as required by the claims of the present invention.

Cairns discloses that a first group of control elements on a row are enabled for the first sub-period of a line period, and a second group of control elements on the same row are then enabled for the second sub-period of the line period (See, *Cairns, Col. 4, Line 28-60*). According to Cairns, a matrix display includes a single scan line driver 42 and two groups of data lines controlled by signals A and B. For a single line period, the control signal A is activated for the first sub-period and the control signal B is activated for the second sub-period. For each sub-period, a scan line is active and enables one of two groups of control elements (See, *Cairns, Figure 7*). Also, Cairns discloses a matrix display made up of two scan line drivers and one group of data lines. The left scan line driver 53 generates half-scan lines L1-LN. The right scan line driver 54 generates half-scan lines R1-RN. For each sub-period, a half-scan line is active and enables half of the control elements of a full line. (See, *Cairns, Figure 9*). Both Figures 7 and 9 of Cairns discloses enabling half of the scan electrodes on a scan line.

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In contrast, the present invention requires "wherein each scanning signal enables all of the scanning electrodes on a scanning line." Figure 1 of the present Application shows an embodiment of the invention. For a line period, Y driver 1 is selected and activates an even scan line C0-C14. For the next line period, Y driver 2 is selected and activates an odd scan line C1-C15 (*See, Present Application, Fig. 3*). Each active scan line enables all the scan electrodes on the line, corresponding to the data lines generated by the X driver 3.

This results in superior performance and more efficient operation of the image display apparatus of the present invention compared to that of the prior art.

Since the cited reference fails to disclose, teach or suggest the above features recited in amended independent Claim 1, these references cannot be said to anticipate nor render obvious the invention which is the subject matter of those claims.

Accordingly, amended independent Claim 1 is believed to be in condition for allowance and such allowance is respectfully requested.

Applicant respectfully submits that amended independent Claims 3, 5 and 11 are patentable for at least the same reasons as those discussed in connection with amended independent Claim 1.

The remaining claims depend either directly or indirectly from amended independent Claims 1, 3, 5 and 11 and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance.

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Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6809 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: November 23, 2004

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